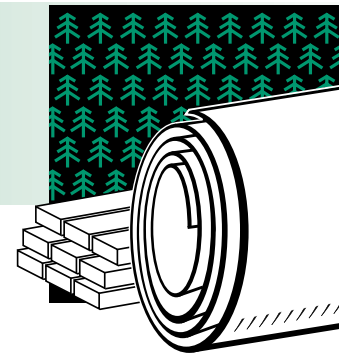


# FOREST PRODUCTS

## Project Fact Sheet



## SURFACTANT SPRAY: A NOVEL TECHNOLOGY TO IMPROVE FLOTATION DEINKING PERFORMANCE

### BENEFITS

- Reduces consumption of surfactants and other chemicals
- Increases ink removal
- Reduces sticky formation
- Minimizes environmental impact
- Eliminates fiber contamination
- Improves recovery of recycled fibers
- Increases productivity
- Improves paper quality

### APPLICATIONS

The pulp and paper industry should have access to an easily retrofitted commercial product 3–5 years after the technology is successfully developed. It is estimated there are more than 400 individual flotation cells in North American paper recycling plants and that 50 percent of them are likely to purchase the technology.

## FROTHER SPRAY TECHNOLOGY OFFERS SEVERAL ADVANTAGES OVER CURRENT TECHNOLOGY

Paper mills increasingly depend on recycled feedstocks to overcome the shortage of fiber and comply with environmental restrictions on adding paper to landfills. An innovative flotation deinking technology has been proposed for removing ink from wastepaper that will provide better process control mechanisms than current deinking technologies and offer economic benefits to the paper industry.

The new technology would use an atomizer to spray frother at the top of the flotation column, an approach that significantly improves the flotation deinking process, reduces the use of chemicals, and loss of fiber and water. Frother spray technology will control the concentration and distribution of various surfactants and will be easily retrofitted to industrial flotation equipment without significant modifications to existing systems.

If successfully developed, the new technology will benefit the pulp and paper industry by reducing its operating costs, enhancing its capital effectiveness, improving fiber yield and quality, and minimizing the environmental impact of paper manufacturing. Preliminary data show, in a typical recycling mill of 250 tons of fiber/day, the new technology will significantly reduce the industry's use of water by 75 percent, use of chemicals by 95 percent, and increase fiber yield 5 percent.

### FROTHER SPRAY WILL REPLACE CONVENTIONAL FLOTATION DEINKING

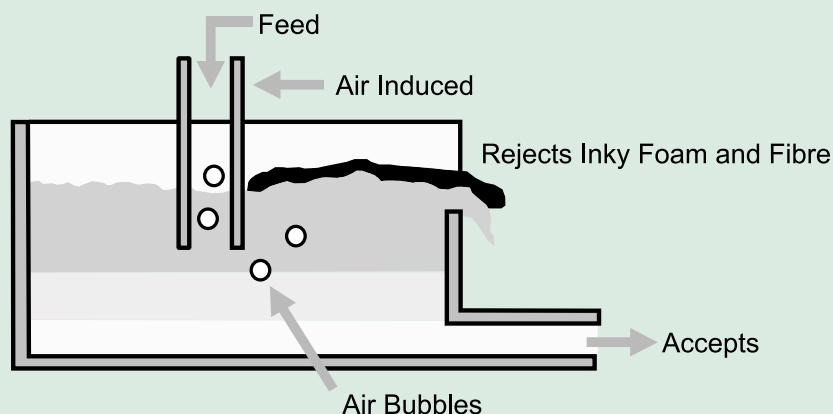


Figure 1. Schematic of a flotation deinking cell



## Project Description

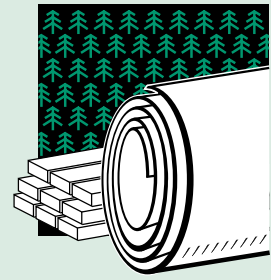
**Goal:** To develop an innovative flotation deinking technology for recycling various grades of paper at a much-reduced cost.

Investigators will take two paths toward developing the proposed technology. A laboratory study will be directed toward gaining a fundamental understanding of froth stability, the fiber and water loss mechanism, and collector chemistry. The second path will involve applying the understanding gained in laboratory studies to commercial pilot-scale trial runs using recycled papers.

There will be six major tasks in the research effort: (1) Demonstrating the proposed technology in a pilot-scale facility using mixed office waste; (2) developing an understanding of fluid dynamics in froth layer in relation to fiber entrapment, water drainage, and ink attachment to optimize the performance of the proposed technology for deinking of various grades of paper; (3) developing a fundamental understanding of the role of different chemicals for deinking old newsprint and old magazines; (4) demonstrating the developed technology for deinking old newsprint, old magazines, and old corrugated container boards at the Institute of Paper Science and Technology's pilot scale flotation facility; (5) conducting trial runs in commercial flotation facilities at the Voith Sulzer facility in Wisconsin or at a mill site with vendors and other industrial partners; and (6) conducting an economic analysis of the developed technology through an outside consultant.

## Progress & Milestones

- The deinking chemistry study has started which can be easily transferred from the current flotation technique to the "surfactant spray" technology.
- Plans for the development of IPST's pilot-scale flotation deinking facility are underway.
- The pilot scale flotation cell is under construction.
- A subcontract to Voith Sulzer Paper Technology was issued.



### PROJECT PARTNERS

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February 2001